II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. Federal Planning Goals and Objectives

In order to guide the formulation and evaluation of alternative courses of action for MMPA rulemaking, based on input from Federal, State, and local governments, conservation organizations, and the general public, the Service developed goals and objectives. These goals are derived from the MMPA, ESA, the Recovery Plan, and implementing regulations.

A planning goal is a broad statement of intent, oftentimes required by law. For example, Goal 1 requires the use of "best available scientific information" as specified in the MMPA (50 C.F.R. 18.27) for the purposes of establishing an allowable take of marine mammals. A planning objective identifies what actions are required to meet the planning goal.

Following is a list of the goals and objectives the Service considered for MMPA rulemaking.

GOAL 1: Scientific Standard

Utilize the best available scientific information during the rulemaking process.

OBJECTIVE:

Integrate the best available scientifically sound information on manatee population models, survival estimation, causes of death, mortality estimation, reproduction, and population structure to establish total allowable taking for government programs effecting watercraft operation and watercraft access for a period not to exceed five years.

GOAL 2: Negligible Impact Standard

Ensure that the Federally Recommended Alternative meets the negligible impact standard for incidental, unintentional take of Florida manatees in accordance with the MMPA.

OBJECTIVE:

Develop a rule which is not reasonably expected, and not reasonably likely to adversely affect, manatees through effects on annual rates of recruitment or survival.

GOAL 3: Mitigating Measures Standard

Identify mitigating measures which would render the impacts of watercraft operation and access negligible when it would not otherwise satisfy that requirement.

OBJECTIVE:

Integrate into the rule potential mitigating measures that could allow a given alternative to meet the negligible impact standard.

GOAL 4: Florida Manatee Recovery Plan Standard

Ensure that the Florida manatee population increases annually consistent with the recruitment goals contained in the Florida Manatee Recovery Plan.

OBJECTIVE:

In addition to meeting the negligible impact standard, maintain a positive annual manatee population recruitment rate and corresponding population increase, based on an analysis of total annual Florida manatee population mortality (all causes) and recruitment projected over a period not to exceed five years.

GOAL 5: Endangered Species Act Compliance Standard

Ensure that the Federally Recommended Alternative meets the jeopardy and adverse modification of designated critical habitat standards in accordance with the ESA.

OBJECTIVE:

Conduct intra-agency section 7(a)(2) consultation to determine if the Proposed Action meets the jeopardy and adverse modification of designated critical habitat standards.

GOAL 6: Least Practicable Adverse Impacts To Manatees Standard

Integrate into the rule appropriate means and measures of effecting the least practicable adverse impacts on manatees for programs that regulate watercraft operation, operate watercraft, regulate the construction and/or funding of watercraft facilities, and operate watercraft facilities.

OBJECTIVE:

For those alternatives that meet the negligible impact standard, with or without the inclusion of mitigating measures, and the Recovery Plan goal for recruitment, incorporate feasible (economic and technological) means and measures which would ensure that take authorized by the rule, by program category, would meet the least practicable adverse impact standard for manatees.

GOAL 7: Least Practicable Adverse Impacts to Manatee Habitat Standard

Integrate into the rule means and measures of effecting the least practicable adverse impacts on manatee habitat for programs that regulate watercraft operation, operate watercraft, regulate the construction and/or funding of watercraft facilities, and operate watercraft facilities.

OBJECTIVE:

Establish means and measures in the rule that would be implemented to effect the least practicable adverse impact on manatee habitat, mitigate for the loss or modification of manatee habitat, and restore manatee habitat.

GOAL 8: Take Due to Harassment Standard

Integrate into the rule means and measures to reduce the take of manatees due to harassment from programs that regulate watercraft operation, operate watercraft, regulate the construction and/or funding of watercraft facilities, and operate watercraft facilities.

OBJECTIVE:

Establish means and measures in the rule to reduce the take of manatees due to harassment.

GOAL 9: Geographic Based Measures

Establish geographic-specific measures in the rule to minimize taking of manatees for those areas of Florida with high watercraft related manatee mortality rates for programs that regulate watercraft operation, operate watercraft, regulate the construction and/or funding of watercraft facilities, and operate watercraft facilities.

OBJECTIVE:

Identify geographic-specific measures for integration into the rule to minimize the taking of manatees in specified geographic areas with high watercraft related manatee mortality rates.

GOAL 10: Socioeconomic Measures

Minimize adverse effects, both socially and economically, on the boating public, boat manufacturing industry, and associated recreational interests as a result of MMPA rulemaking.

OBJECTIVE:

Conduct an analysis of the social and economic effects in the specified area and over the specified period as a result of MMPA rulemaking.

GOAL 11: Contingency Measures

Establish contingency measures in the rule which would be progressively implemented throughout the specified period as documented watercraft related incidental take approaches the negligible impact threshold prior to the conclusion of the specified period.

OBJECTIVE:

Integrate contingency measures in the rule to ensure the total allowable incidental take of manatees as authorized in LOAs by the Service is not exceeded for the specified activity over the specified period.

GOAL 12: Monitoring and Reporting Measures

Establish an annual monitoring and reporting program for agencies issued LOAs which includes an analysis of the level of taking or impacts to manatees from programs that regulate watercraft operation, operate watercraft, regulate the construction and/or funding of watercraft facilities, and operate watercraft facilities.

OBJECTIVE:

Establish a coordinated, interagency monitoring and reporting program to document the level of taking or impacts to manatees as a result of rule implementation.

GOAL 13: Terms and Conditions in the Letters of Authorization

Establish guidelines in the rule for the development of Terms and Conditions to be included in any LOA issued by the Service for programs that regulate watercraft operation, operate watercraft, regulate the construction and/or funding of watercraft facilities, and operate watercraft facilities.

OBJECTIVE:

Identify Terms and Conditions applicable to requests for LOAs in order to achieve compliance with the provisions of the MMPA.

B. Planning Considerations

The Settlement Agreement (*Save the Manatee Club*, *et al.* v. *Ballard*, *et al.*) required the Service submit to the Federal Register for publication by May 5, 2003, a final MMPA incidental take rule or Negative Finding, complete the appropriate NEPA documentation to support the decision-making. This Final EIS has been prepared in compliance with the Settlement Agreement.

1. Overview of Negligible Impact Methodology

Our proposed negligible impact determinations were based on our qualitative assessment of existing estimates of population parameters relative to the benchmarks. The proposed methodology used a series of demographic benchmarks, which were based on published estimates of survival, reproduction, and population growth rate. As proposed: "These benchmarks are--(1) statistical confidence (95 percent) that the average annual rate of adult manatee survival is 90 percent or greater; (2) statistical confidence that the average annual percentage of adult female manatees accompanied by first or second year calves in winter is 40 percent or greater; and (3) statistical confidence that the average annual rate of population growth is equal to or greater than zero.

As stated in the Proposed Rule, and an integral part of this methodology: "Our first objective is to restore the population to its Optimum Sustainable Population (OSP) level and we have the further objectives of maintaining the species at that level over the short and long term." Expressing this standard quantitatively, we said that in order to find that human-related incidental take is having a negligible impact on the manatee we must find that:

1. There is a reasonable certainty (95 percent) that authorized incidental take will not increase the time needed to reach OSP by more than ten percent.

Additionally, given the MMPA's stated goal of maintaining marine mammal populations within OSP, we proposed that the authorized level of incidental take must ultimately allow the population to maintain itself at, or return to, OSP:

2. There is a 95 percent probability that the manatee population will be above the lower limit of OSP in 50 years; and

3. There is a 99 percent probability that the manatee population will be above the lower limit of OSP in 100 years.

Regarding the probabilities associated with the above standard, the 95 percent probability was chosen to be consistent with the modeling approach used by Wade (1994) for selecting appropriate values for the Potential Biological Removal (PBR) equation variables. That probability is being reconsidered. We selected a higher probability value for the third goal to reflect the relative importance of our long term desire to ensure survival and recovery of the species." (67 FR 69087)

A fundamental planning consideration was the rationale and methodology for making the negligible impact determination. Our basic rationale for assessing effects was described in the Proposed Rule. In the Federal Register notice for the Proposed Rule, we concluded that "the Florida manatee population could be considered to be "healthy" and able to sustain itself after the demographic benchmarks were met for all four stocks based on at least a 20-year data set. Assuming that none of the stocks were severely depleted when data collection relative to the demographic benchmarks began (in the late 1970s and 1980s), twenty years of continued growth at the benchmark rates would in all likelihood result in stocks that are within or near the range of OSP. As such, we have determined that it is reasonable to assume that achievement of the demographic benchmarks will result in a population that is within or near the range of OSP, and that the negligible impact threshold would be that level of incidental take that does not significantly increase the time needed to achieve the demographic benchmarks." (67 FR 69087)

"We examined the current data set and analyses of survival rates, and recruitment, and reviewed population growth rate projections generated by the model presented by Runge et al. at the April 2002 Manatee Population Ecology and Management Workshop (Runge unpubl. analysis), which incorporate the historically observed level of watercraft-related incidental take. This enabled us to qualitatively assess the status of the four stocks relative to the demographic benchmarks, and determine whether anticipated levels of watercraft-related take during the five-year period of the rule are likely to significantly increase the time needed for the stocks to reach OSP. These assessments

were based on a twenty year data set including 15 years of historical data and projections (including levels of watercraft-related take) for the five-year period of the rule. For the Southwest population, for which a 15-year historical data set is not available, we made projections based on the available historical data and the long-term trends of the survival rates (which incorporate watercraft-related take), recruitment, and population growth rates of the 15 year period necessary to run our assessment." (67 FR 69087)

We learned several things during the course of the rulemaking that raised concern about the rationale and methodology presented in the Proposed Rule. First, we learned that the recruitment benchmark may be inappropriate because we have no data that allow us to generate confidence intervals for the percent of females with first and second year calves, so there is no accurate way with confidence to evaluate the status of the stocks against this benchmark. Second, we have learned that the assumptions upon which our initial analysis was based may be wrong. This qualitative analysis relied on two assumptions. These are that: 1) none of the stocks were severely depleted when data collection began in the 1970s and 1980s, and 2) stocks meeting the benchmarks would be growing at health rates, such that 20 years of growth at those rates would result in population levels that would be at or above the Maximum Net Productivity Level (MNPL) for each stock. In other words, we assumed that historical population levels were sufficiently high relative to carrying capacity that continued growth at the benchmark rates for an additional 20 years would result in population levels that were within OSP.

New information has called these assumptions into question. In regard to the assumption that none of the stocks were severely depleted when data collection began, we have the following new information. In building the Incidental Take Model, U.S. Geological Survey (USGS) included the effects of carrying capacity (K) on future growth rates. The model's author solicited the expert opinions of the members of the Warm Water Task Force, who are recognized experts on manatees, regarding current and future carrying capacity. High, low, and median estimates of current carrying capacity were obtained for each stock. The results indicate that, in the view of the members of the Warm Water Task Force on this issue, each of the stocks could currently be well below K. For example, they provided a current estimated K for the Northwest (NW) Stock of 1,200 manatees (with a range of 750 to 3,000). The estimated minimum population size is currently 386 animals, so the current population is at 0.32 K with a range between 0.13 and 0.51 K. Therefore, based on the views of members of the Warm Water Task Force, this stock is currently close to a level that may be considered severely depleted. Note that this is the first attempt by anyone to estimate carrying capacity for manatees. This analysis is going to need considerable additional study before we can make confident statements about the carrying capacity. However, it may be that the population was severely depleted when data collection began. Additionally, there is a great deal of uncertainty regarding future carrying capacity due to uncertainty regarding the fate of the power plants and spring flows over the next 3 to 25 years, which could have additional impacts on the population of the manatee.

The assumption that stocks meeting the benchmarks would be growing at healthy rates, such that 20 years of growth at those rates would result in population levels that would be at or above the MNPL for each stock, has also been called into question. Again using the NW Stock as an example, the current estimated growth rate is meeting the benchmark (the lower bound of the 95 percent

confidence interval is 1.6 percent annual growth) with the point estimate of the growth rate of 3.7 percent per year. Even assuming that the population would maintain this growth rate in the future (note that the initial analysis using the incidental take model indicates that it is unlikely that any of the stocks will maintain their current growth rates), if the new estimates for carrying capacity are correct, this stock is likely further from OSP than we originally thought and may be growing at a slower rate than we originally thought. Therefore, we may not be able to assume that this stock, growing at a benchmark rate for 20 years, would produce a population level that would be at or above the MNPL. In short, there is concern that achieving the benchmarks does not ensure a stock is growing at a "biologically acceptable rate."

The assumptions and criteria we originally proposed to use for determining negligible impact are being reconsidered.

Additional concerns with the negligible impact methodology employed in the Proposed Rule were identified by commenters. In the Proposed Rule we stated: "In terms of stocks that are depleted (*i.e.*, population levels below OSP), it is generally accepted that the large majority of annual net productivity must be reserved for the recovery of the stock to its OSP level, and that only a small portion should be allocated for incidental take, so that human-related take does not significantly increase the time needed to reach OSP." (67 FR 69086). The MMC identified an additional test. Allowable take should only be a small portion of annual net productivity. The MMC noted that 10 percent of annual net productivity is the generally accepted standard for MMPA. MMC also suggested that allowable take criteria be coupled with the increase in the time to reach OSP standard described above. MMC pointed out that if used as a separate standard, take could be allowed when a stock is not growing at a biologically acceptable rate. Table 1 shows the current levels of watercraft related mortality as percentages of annual net productivity for each stock (Fraction of Excess Growth Methodology [FEG]).

2. Incidental Take Model

The Proposed Rule also described an Incidental Take Model (Appendix I) that was being developed to aid in assessing the effects of various levels of incidental take on the manatee stocks. The Incidental Take Model was based on a model developed by USGS and presented at the April 2002 Manatee Population Ecology and Management Workshop. This model was determined to be particularly well suited for use in the negligible impact determination because it utilizes the best available scientific information regarding Florida manatee survival estimates. It also utilizes the best available information regarding reproductive rates (recruitment) in Florida manatees. The fact that the model is built on estimates of survival and recruitment also corresponds directly to the regulatory definition of "negligible impact." The model is based on female manatee population dynamics. The female manatee population is separated by age and reproductive status. Survival and reproductive probabilities are defined for each class. The model projects population trends for each of the four manatee stocks based on repeated simulations that incorporate environmental and demographic variability, as well as varying levels of human-related take.

The initial modeling was completed in March 2003. Several components of the model are new and the model has not been subjected to detailed sensitivity analysis, nor to peer review. Regarding some

specific components of the model, of particular concern are the warm water carrying capacity submodel and estimates of carcass recovery rates. The Warm Water Task Force served as an expert panel for the development of the carrying capacity submodel used to project changes in the carrying capacity of warm water habitat. After eliciting the elements of this submodel from the Warm Water Task Force, a document describing the submodel mathematically, and graphically showing the properties of it, was prepared. The Warm Water Task Force has seen this document, and several members of the Warm Water Task Force have offered comments, but they have not completed a formal review. Additional meetings of the Warm Water Task Force will need to be held to review this submodel in more depth.

Regarding the estimated carcass recovery rates (the fraction of dead manatees recovered by the carcass salvage program), these rates have a strong influence on the calculation of negligible impact, because it serves as the link between the numbers of *observed* and *actual* watercraft related mortalities and has effects on calculated growth rates and adult survival. The fraction of mortality due to watercraft also has an important influence on the determination of negligible impact because it is used to calculate the survival rate in the absence of take, hence the degree to which take-reduction could improve the population growth rate. Both of these quantities have only recently been estimated and have not been peer reviewed. These quantities are point estimates for recovery rate, and the level of uncertainty has not yet been developed. The results of the initial modeling analysis are presented in Table 1.

Subsequent to the Proposed Rule's publication, new carcass recovery rate and other data revealed that the mortality figures we cited in the Proposed Rule potentially underestimated the actual mortality rates. For example, the Incidental Take Model estimates that only approximately 45 percent of the carcasses in the NW Stock are actually found. So when we say that the observed average annual watercraft related mortality rate for the NW Stock is 3.8 per year, it is possible that as many as 8.4 manatees per year may actual be killed by boats. If this is true, it means that the actual take due to watercraft is equivalent to 37 percent of the stock's annual net productivity, which means that the estimates we used in the Proposed Rule were potentially over-optimistic

The table below summarizes the information that was reviewed for the purposes of the Proposed Rule and the current calculations of those parameters based on new and updated information since the Proposed Rule. The analysis from which these estimates are derived are the same as those cited in the Proposed Rule (Langtimm and Runge, unpublished data), however they have been recalculated because of the new and updated information.

Table 1 . Negligible Impact Determination Methodology Results (see Appendix I).

	NW	USJ	Atlantic	SW
Adult Survival[1]	PR[4]= 96.2 (95.3 to 97.2) Now[5]=95.6 (94.3 to 96.9)	PR = 96.1 (90.0 to 98.5) Now = 96.0 (93.7 to 98.2)	PR = 94.3 (92.3 to 96.2) Now = 93.6 (92.3 to 94.9)	PR = 90.6 (86.7 to 94.4) Now = 90.6 (86.7 to 94.4)
Recruitment[2]	PR = 43 % Now = 43 %	PR = 41 % Now = 41%	PR = 42 % Now = 42 %	PR = no data Now = no data
Growth Rate[3]	PR = 5.0 (3.2 to 6.8) Now = 3.7 (1.6 to 5.6) Future[7] =1.4(–1.8 to 3.8)	PR = 6.1 (1.7 to 8.7) Now = 6.2 (3.7 to 8.1) Future=3.8 (1.0 to 6.2)	PR = 3.2 (0.3 to 5.7) Now = 1.0 (-1.2 to 2.9) Future= –6.8 (–9.4 to –4.5%)	PR = no data Now = -1.1 (-5.4 to 2.4) Future= –14.9 (–19.2 to –11.4)
Meeting Benchmarks?	PR = yes Now = yes Future = no	PR = yes Now = yes Future = yes	PR = yes Now = no Future = no	PR = no Now = no Future = no
Observed Average Annual Watercraft Mortality (1998 - 2002)	3.8	2.4	37.0	37.2
Percent of Annual Net Productivity Taken By Watercraft[6]	21.9%	20.1%	72.5%	169%
Projected Negligible Impact Level from Model (deaths per year)	<1	<1	<1	0

[1]- The benchmark criterion is 95 percent confidence that lower CI is greater than 90.

[2] - The benchmark criterion is 95 percent confidence that the average annual percentage of adult female manatees accompanied by first or second year calves in winter is 40 percent or greater.

[3] - The benchmark criterion is 95 percent confidence that the average annual rate of population growth is equal to or greater than zero.

[4] - 'PR' indicates the calculated values for the benchmarks presented in the Proposed Rule

[5] - 'Now' indicates the calculated values for the benchmarks based on the current best available information.

[6] - Calculated as follows for the NW Stock: Minimum population size is 386 manatees; if the current average growth rate is 3.7 percent per year, then (on average) 14.3 more manatees are born into this stock than die each year (net productivity) under current levels of incidental take. The current average annual watercraft related mortality rate is 3.8 manatees; therefore, assuming these deaths had not occurred, net productivity would have been 18.1. As such, the watercraft related death of 3.8 manatees represents 21.9 percent of what net productivity would have been in the absence of watercraft related incidental take. This is based on the minimum population size and based on assumed observed watercraft related mortality, both of which may be uncertain.

[7] - 'Future' indicates the projected future growth rates based on the initial analysis using the incidental take model. These growth rates take into account environmental stochasticity and potential changes in carrying capacity due to reductions in available warm water. These are relative because changes in growth rates now may substantially affect future growth rates, which may be affected tremendously by things other than watercraft related take.

The assumptions and criteria we originally proposed to use for determining negligible impact are being reconsidered.

3. Comparison of Negligible Impact Methodologies

Based on internal review, ongoing dialogue with species experts, and significant public comment, we reviewed three negligible impact methodologies in order to assess whether incidental take would have more than a negligible impact on each of the four stocks of Florida manatees: 1) We conducted a new analysis using the same methodology as described in the Proposed Rule (Benchmark Methodology) with the most current information and the preliminary results of the Incidental Take Model; 2) we analyzed whether the fraction of the manatee population growth above 1 ("excess" growth) that is lost due to the effects of watercraft related mortality exceeds 10 percent (FEG); and 3) we calculated the PBR level, as described in the MMPA and recommended by some species experts. The results of this analysis, projected over the five-year specified period of a MMPA rule, are provided in Table 2.

The PBR method is described in the MMPA. The PBR for each species or stock of marine mammal is calculated as part of the stock assessment required under section 117 of the MMPA, and is defined as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its OSP. The Service elected not to utilize the PBR methodology to determine negligible impact for Florida manatees in the Proposed Rule, because PBR is more commonly used for negligible impact determinations for the purpose of commercial fishing activities. The PBR is calculated according to the following formula:

$$PBR = (N_{min})(½\ R_{max})(F_R)$$

Where N_{min} is the minimum estimate of the population size; R_{max} is the maximum net productivity rate; and F_R is a recovery factor whose value ranges from 1.0 to 0.1. We have used a value of 0.08 for R_{max} based on information presented at the April 2002 Manatee Population Ecology and Management Workshop.

We also analyzed whether allowable take would represent a small portion of annual net productivity for each stock of the Florida manatee. The MMC noted a generally accepted standard, which is that authorized take should not exceed 10 percent of annual net productivity in order to allow a marine mammal stock to continue to grow at a biologically acceptable rate. MMC recommended that the annual net productivity standard be coupled with our proposed increase in time to reach OSP standard in order to reach a negligible impact determination for a given marine mammal stock. We analyzed whether the fraction of manatee population growth in each stock above 1 ("excess" growth) that is lost due to the effects of watercraft related mortality exceeds 10 percent (Fraction of Excess Growth, FEG Methodology), and included the results in our comparison.

Table 2. Comparison of Projected Observed Mortality and the Number of Manatees Which Meet the Three Negligible Impact Thresholds for the PBR, FEG, and Benchmark Methodologies in the Four Stocks of the Florida Manatee for a Period of Five Years.

Methodology (5-year projection)	USJ Stock	NW Stock	Atlantic Stock	SW Stock
Projected Mortality/Year (based on 1998-2002 observed mortality)	12	19	185	186
PBR Methodology	3	7	28	27
FEG Methodology	5	<5	<5	0
Benchmark Methodology	<5	<5	<5	0

The results of this analysis found that the historic adult survival and population growth rates were highest in the Upper St. Johns River (USJ) and NW stocks. These stocks also have positive expected growth rates over the next 20 years if increasing trends in watercraft related mortality continue. In the Atlantic and Southwest (SW) stocks, the historic growth rates, as estimated from a deterministic stage-based population model (Runge et al., *in review*), are not convincingly positive, and the projected growth rates are negative if watercraft related mortality continues to increase. For all four stocks, the projected growth rates over the next 20 years are lower than the historic growth rates. In the USJ and NW stocks, this is largely because the populations may approach their carrying capacity in that time frame, and hence, slow their growth. In the Atlantic and SW stocks, the projected growth rates are lower than historic growth rates largely because of the anticipated continued increase in the watercraft related mortality rate.

In the USJ and NW stocks, if no action is taken, the probabilities of significant increase (greater than 10 percent) in the time to reach OSP are 10 percent and 62 percent, respectively. In the Atlantic and SW stocks, if no action is taken, the probability if achieving OSP with 100 years is zero, thus the probability of an increase (greater than 10 percent) in the time to reach OSP is 100 percent.

On an absolute scale, net productivity is low in all four stocks. In the USJ and NW stocks, net productivity, hence allowable take, is limited because the populations are small. Even though the growth rates are healthy in the USJ and NW stocks, there is not a large production of new animals each year. For example, with a population size of approximately 140 animals in the USJ Stock and a growth rate of approximately six percent, the net productivity is 8.4 manatees per year.

In the Atlantic and SW stocks, net productivity, hence allowable take, is limited because the growth rates are so low. In fact, the SW Stock, there appears not to be any net productivity at all.

This analysis used newly collated data, has not been peer reviewed, and has not been subject to sensitivity analysis. Thus, the results of the Incidental Take Model are considered preliminary. The

results of this analysis, projected over a five year period, indicate that for the three methods we compared: 1) watercraft related incidental take in the USJ Stock (12 manatees) exceeds what would produce a negligible impact (3 to 5 manatees by all three methods); 2) watercraft related incidental take in the NW Stock (19 manatees) also exceeds the negligible level (5 to 7 manatees by all three methods), a result that is strongly affected by the carcass recovery rate in this region; and 3) watercraft related incidental take in the Atlantic (185 manatees) and SW stocks (186 manatees) exceeds the negligible impact levels for all three methodologies (0 to 28 manatees for both the Atlantic and SW stocks). Further, as discussed in Chapter IV, these stocks (Atlantic and SW) do not have a high probability of achieving OSP, even in the absence of watercraft related incidental take. Therefore, results are consistent, regardless of which of the three methodologies is used. A more detailed discussion of the Incidental Take Model results are found in Appendix I.

C. Alternatives Formulation

1. Assumptions

Alternative's formulation includes several assumptions:

(1) the scope of MMPA incidental take rulemaking includes watercraft related mortality and harassment of Florida manatees, of which watercraft related mortality represents approximately 30 percent of the total human-related manatee mortality;

(2) current manatee conservation efforts (*e.g.*, speed zones, manatee education, etc.) have yet to stabilize and/or reduce the rate of watercraft related incidental take;

(3) in accordance with Goal 4, any promulgated rule will ensure that the population increases annually consistent with the recruitment and survival goals contained in Recovery Plan;

(4) in accordance with Goal 5, the rule must comply with the provisions of the ESA;

(5) to evaluate all potential effects, the specified area to be examined will range from the smaller, more protected manatee stocks to the entire State (to include those areas of higher watercraft related manatee mortality); and,

(6) in accordance with Goal 3, the mitigating measures described below will be included, where necessary, in each alternative and tailored to the conditions specific to that alternative (*e.g.*, watercraft related mortality rates, relative percentage of the manatee population affected, level of boating activity, level of existing manatee protection, location and number warm water sites, overall assessment of risk to manatees, etc.).

2. Designation of Separate Stocks of the Florida Manatee Population

Long-term studies suggest four relatively distinct regional populations of manatees in Florida--(a) the northwest region, consisting of the counties along the Gulf of Mexico from Escambia County east and south to Hernando County, Lafayette and Gilchrist counties, and Marion County adjacent to the Withlacoochee River; (b) the USJ Region, consisting of Putnam County from Palatka south; Volusia, Flagler, and Marion counties adjacent to the St. Johns River or its tributaries; and Lake and Seminole counties; (c) the Atlantic Region, consisting of counties along the Atlantic coast from Nassau County south to Miami-Dade County, the portion of Monroe County adjacent to the Florida Bay and the Florida Keys, Okeechobee County, and counties along the lower portion of the St. Johns River north of Palatka, which includes Putnam, St Johns, Clay and Duval counties; and (d) the southwest region, consisting of the counties along the Gulf of Mexico from Pasco County south to Whitewater Bay in Monroe County and DeSoto, Glades, and Hendry counties.

These divisions are based primarily on documented manatee use of wintering sites and from radio-tracking studies of individuals' movements. Radio-tracking studies (Bengston 1981) and other information (USFWS 2001; MMC 1988) suggest that most manatees wintering at Blue Spring tend to remain in the area identified as the USJ Region. The manatees of this region comprise approximately 3 percent of the total Florida manatee population. The lower St. Johns River, the Atlantic coast, and the Florida Keys are considered to represent the Atlantic Region, based on the results of long-term radio tracking and photo-identification studies (Beck and Reid 1995; Reid *et al*. 1995; Deutsch *et al*. 1998). The manatees of this region comprise approximately 43 percent of the total Florida manatee population.

On the west coast, Rathbun *et al*. (1995) reported that of 269 recognizable manatees identified at the Kings Bay and Homosassa River warm water refuges in northwest Florida between 1978 and 1991, 93 percent of the females and 87 percent of the males returned to the same refuge each year. Radio-tracking results suggest that many animals wintering at Crystal River disperse north in warm seasons to rivers along the Big Bend coast, particularly the Suwannee River (Rathbun *et al*. 1990). The manatees of this region comprise approximately 12 percent of the total Florida manatee population. The existence of more or less distinct subgroups in the southwestern area of Florida (*e.g.*, from Tampa Bay south) is debatable. It is possible that manatees using warm water refuges in Tampa Bay, the Caloosahatchee River, and Collier County may be somewhat discrete groups; however, given available data, the Florida Manatee Recovery Team chose to identify them as one group. The manatees of this region comprise approximately 42 percent of the total Florida manatee population.

Although some movement occurs among regional populations, researchers found that analysis of manatee status on a regional level provided significant insights into important factors related to manatee recovery, such as winter aggregation areas, manatee movement patterns, and human interactions (USFWS 2001). This led the Florida Manatee Recovery Team and the Service to establish objective and measurable recovery criteria for each region based upon demographic benchmarks for certain aspects of manatee life history--adult survival, reproduction, and population growth in the Recovery Plan.

Based on currently available information, the Service has concluded that these regions meet the criteria for classification as separate stocks under the MMPA. The guidelines for assessing marine mammal stocks (Barlow *et al*. 1995) advise a risk-averse strategy when determining stock structure. The guidelines advise that this requires starting with a definition of stocks based on the smallest groupings that are biologically reasonable and are practical from a management perspective. Biological evidence indicates considerable demographic differences among the four stocks. For example, based on recent analysis (Langtimm *et al*. 2002) estimates of adult survival rates vary among stocks; ranging from a high of 96.0 (95 percent confidence interval (CI) 93.7 to 98.2) in the USJ Stock to a low of 90.6 (95 percent CI 86.7 to 94.4) in the SW Stock. Adult survival in the Atlantic Stock is estimated to be 93.6 percent (95 percent CI 92.3 to 94.9), and adult survival in the NW Stock is 95.6 (95 percent CI 94.3 to 96.9). Similarly, estimates of population growth rates vary among stocks. According to a recent analysis by (Runge *et al*. 2002 unpublished analysis), the growth rate is estimated to be highest in the USJ Stock at 6.2 percent per year (95 percent CI 3.7 to 8.1), followed by the NW Stock (3.7 percent growth per year; 95 percent CI 1.6 to 5.6), the Atlantic Stock (1.0 percent growth per year; 95 percent CI -1.2 to 2.9; negative numbers mean that the population is decreasing), and the SW Stock (-1.1 percent growth rate; 95 percent CI -5.4 to 2.4).

As noted above, available evidence indicates that there is relatively little movement of manatees among the stocks. The highest dispersal rate assumed by the FWC for the purposes of their recent Population Viability Analysis was 2 percent per year between the USJ Stock and the Atlantic Stock (Florida Marine Research Institute 2002). The FWC assumed that dispersal rates among the other stocks did not exceed 0.5 percent per year. This indicates that dispersal from stocks in which the population is likely growing (*e.g.*, the NW Stock) is likely not sufficient to compensate for high levels of human-related mortality in other stocks (*e.g.*, SW). The stock assessment guidelines warn that managing areas with differential levels of take as a single stock can lead to depletion (Wade and Angliss 1997).

The threats facing manatees also vary among stocks. For example, the number of watercraft related deaths during the period 1998 to 2002, compared with the 2001 synoptic survey count of manatees is about 37 animals per year in the Atlantic (1,408 animals counted) and SW (1,379 animals counted) stocks, 2.4 animals per year in the USJ Stock (112 animals counted), and 3.2 in the NW Stock (377 animals counted). Watercraft related incidental take is increasing at between 5.96 percent per year (in the USJ and NW stocks) and 9.53 percent per year (in the Atlantic and SW stocks). The disproportionate amounts of incidental take in the SW and Atlantic stocks argues for definition of separate stocks. Additionally, manatees in the SW Stock are more vulnerable to red tide than in other stocks, and manatees in the Atlantic and SW stocks are more dependent on man-made warm water sources than are manatees in the USJ and NW stocks (USFWS 2001). Addressing these threats effectively necessitates application of different management approaches in the different stocks. This further supports the definition of these as separate stocks.

Based on the preceding analysis, the Service has concluded that the four demographic regions of Florida manatees identified in the Recovery Plan meet the criteria for designation as separate stocks under the MMPA. The Service intends to reflect this determination in the next revision of the Stock Assessment Report for the West Indian Manatee, and for the remainder of this document we will refer to the stocks as the NW Stock, USJ Stock, Atlantic Stock, and SW Stock (Figure 1).

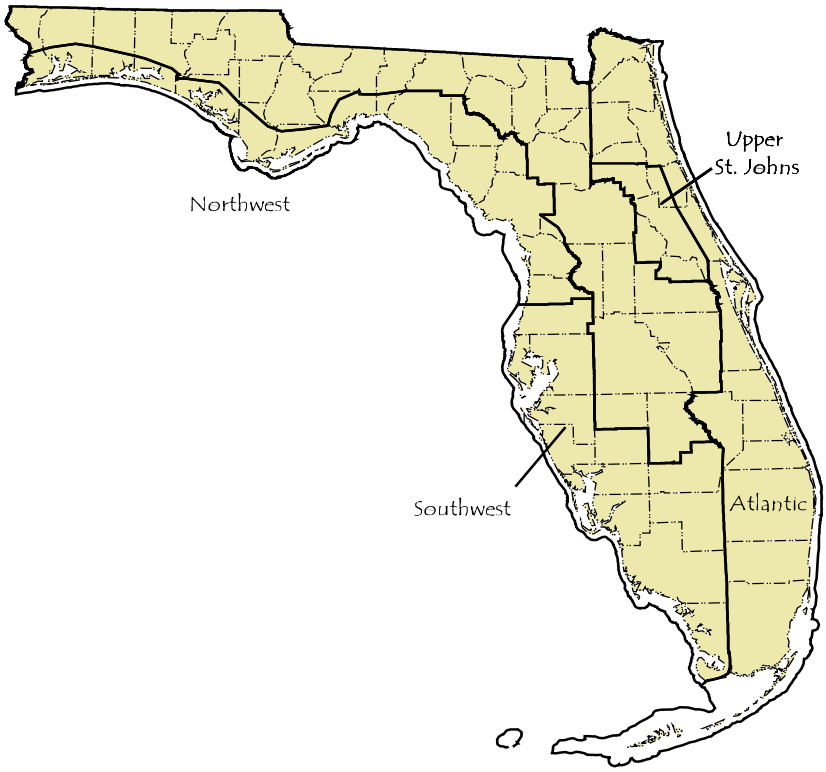

Figure 1: Florida Manatee Stocks: NW, SW, USJ, and Atlantic.

Finally, while these are considered stocks pursuant to the MMPA, these stocks do not meet the criteria for designation as Discrete Population Segments pursuant to the ESA. As such, it would not be possible or appropriate for us to consider reclassification of the stocks separately under the ESA.

3. Relationship of the MMPA and the ESA

Following is an explanation of the framework of the MMPA and the ESA, and a discussion of the relationship and effect of the MMPA rulemaking on the Service's section 7 consultation process for Florida manatees during the review of permit applications for watercraft access facilities and operations, including boating events authorized by the USCG. The Corps permit review process is used as an example for the purposes of illustrating the relationship between the MMPA and the ESA. The same relationship applies to the other activities referred to in the Proposed Rule.

Both the MMPA and ESA prohibit the incidental take of Florida manatees in the course of otherwise lawful activities, unless authorized. These prohibitions have been in place since 1972 for the MMPA and 1973 for the ESA. Through section 7 of the ESA, the Service can authorize the incidental take

of threatened and endangered species that is reasonably certain to occur as long as the specific ESA requirements are met. However, if the listed species is a marine mammal, incidental take regulations under the MMPA must be in place before incidental take under the ESA can be authorized.

The section 7 process applies to any action that is federally authorized, funded, or conducted by a Federal agency. Where an action is proposed by a non-Federal agency, there is no Federal nexus and that agency would normally apply for a section 10(a)(1)(B) permit under the ESA in order to be granted incidental take authorization under the ESA. However, the Service's guidelines (54 FR 40346) state: "If an endangered or threatened marine mammal may be taken incidentally to a private action, regulations under section 101(a)(5) of the MMPA would be required. Consultation under section 7 of the ESA would be conducted since issuance of the MMPA regulations is a Federal action. The incidental take statement issued with the biological opinion would address taking concerns under the ESA, and a section 10 permit would not be required." . The guidance goes on to say: "To require a separate section 10 permit in addition to section 101(a)(5) regulations and a section 7 consultation would serve only to increase the administrative burden on the applicant and the government with no corresponding benefit to endangered or threatened marine species." (54 FR 40347).

To date, incidental take regulations for the Florida manatee have not been promulgated under the MMPA. Therefore, the Service has been unable to authorize incidental take for manatees under the ESA for permit applications for docks, marinas, and boat ramps, where the Service finds that the incidental take of manatees is reasonably certain to be caused by the authorization and construction of these types of watercraft access facilities.

If a negligible impact finding is made under the MMPA, the Service would publish regulations allowing the authorization of incidental take of manatees associated with the authorization and construction of watercraft access facilities. The Service could then issue LOAs to government agencies which authorize those agencies to conduct activities that may incidentally take small numbers of manatees up to the negligible impact level for a period of five years.

The overall effect of a future rule would be that, in those stocks where a level of incidental take is considered to be negligible, permit applications that previously could not receive an ESA section 7 incidental take statement because that permit, if issued, was reasonably certain to cause incidental take of manatees, will now be able to receive a section 7 incidental take statement that authorizes a level of take of manatees, provided the total take remains below the negligible level.

4. Relationship of Watercraft Access Permitting to Direct and Indirect Effects on Manatee Mortality and Harassment

As discussed throughout this Final EIS, watercraft related manatee mortality and increasing mortality trends have been documented since the collection of manatee mortality data began in 1974. Watercraft related mortality accounts for approximately 30 percent of all manatee mortality. From January 1974 to December 2001, 1,069 manatee deaths have been the result of watercraft collisions. Of the 325 manatee deaths recorded in 2001, 81 were watercraft related. In 2002, watercraft manatee mortality has reached an all time high of 95 individuals.

Almost 1.4 million boats used Florida's waterways in 2001, including more than 940,000 registered instate vessels and an estimated 400,000 out-of-state vessels. As the Florida population grows, the addition of new watercraft into Florida's waters has the potential to increase boat/manatee interactions and adversely affect manatees.

Because the manatee is listed as endangered under the ESA, the Service and Federal agencies are obligated to coordinate section 7 consultations regarding the authorization of watercraft access facilities. During the consultation process, the Service analyzes both the direct and indirect effects, as well as interdependent and interrelated effects, of such facilities on manatees and their habitat.

i. Direct Effects

The direct effects of watercraft access facilities on manatees and essential features of manatee habitat (such as seagrasses), include those arising from the location, design, and construction of watercraft access facilities, and associated dredging and filling for the construction of those facilities. In examining such effects, including those on seagrasses and other important features of manatee habitat, the Service analyzes the extent to which such effects are addressed by local Manatee Protection Plans (MPP), State review, and other protective conservation measures, such as standard construction precautions to protect manatees during construction. Standard construction conditions have been used throughout the range of the manatee for more than a decade and have proven to reduce the direct effects to manatees and their habitat within the facility footprint.

Additionally, increased levels of impacts to manatee habitat occur near boat access points. Higher concentrations of propeller dredging of sea grasses occur near boat access points. Impacts to sea grasses from boating-related water-bourne environmental contaminants such as fuel and oil spills occur in higher concentrations nearby boat access points. Take in the form of harassment from boats could increase in certain areas with the addition of more sublethal boat-manatee interactions.

ii. Indirect Effects

Indirect effects are those long-term effects that are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. The types of action under consideration include permitting or authorizing activities, including funding, that facilitate watercraft access and operations. The trends described above demonstrate that a positive correlation exists between watercraft use of Florida's waterways, access facilities, and watercraft related incidental take. It would be pointless to attempt to predict with absolute certitude whether or not any given dock or boat ramp will serve watercraft involved specific, future take events, given the current state of knowledge. The evidence of watercraft related incidental take of manatees is based on probabilities and trends. As the number of access structures and total boating activities increase, so does the incidence of watercraft related incidental take of manatees. Incidental take of manatees is reasonably certain to occur as additional watercraft access structures are added to waterways inhabited by manatees. Authorizing a dock, marina, boat ramp, or boating event in manatee-inhabited areas indirectly affects manatees by incrementally increasing the likelihood of manatee mortality and injury resulting from collisions with new and existing boats associated with or operating from the permitted facility. Placement of boat access points and the location and timing of boating events

has the potential to concentrate boating activities in the same vicinity as manatees. In this density-dependent relationship, the likelihood of boat collisions with manatees is increased proportional to the number of boats using the area. This is particularly true when and where boats are operated in a manner and at a speed that increases the risk of collisions with manatees. Simply put, more boats in areas used by manatees increases the likelihood of boat strikes to manatees.

The FMRI database now documents 1,184 living individuals scarred from collisions with boats. Most of these manatees (1,153, or 97 percent) have more than one scar pattern, indicating multiple strikes with boats. Carcasses examined at necropsy also bear healed scars of multiple past strikes by boats; one extreme case, recently noted by the FMRI, had evidence of more than 50 past boat collisions (O'Shea *et al.* 2001).

Section 7 of the ESA imposes both procedural and substantive requirements on Federal agencies. Federal agencies must consider all areas, during the consultation process, that are affected directly or indirectly by their actions and not merely the immediate area, and the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent, as noted in *National Wildlife Federation* v. *Coleman*, 529 F.2d 359 (5th Cir.), *cert. denied*, 429 U.S. 979 (1976). Further, the Fifth Circuit's holding in *Coleman* is binding precedent in the Eleventh Circuit *Bonner* v. *Prichard*, 661 F.2d 1206 (11th Cir. 1981). In this case, the court ruled that indirect effects of private residential development resulting from the proposed construction of highway interchanges had to be considered as impacts of a proposed Federal highway project, even though the private development had not been planned at the time the highway project was proposed. It should be recalled that "take" includes any indirect actions such as the intentional or unintentional harassment, harm, pursuit, wounding, or killing of individual animals, and the degradation or modification of habitat such that essential behavioral patterns are impaired. Therefore, the Service has and will continue to evaluate these indirect effects of watercraft access development on manatees and believes there is a link between these facilities and manatee mortality and harassment.

On August 21, 2001, the Service implemented its Interim Strategy to provide guidance relating to the direct and indirect effects of watercraft access development on manatees during the time period while incidental take regulations under the MMPA were under consideration. The principle purpose of the Interim Strategy is to provide assistance in determining appropriate measures for minimizing and eliminating project-related adverse effects from watercraft collisions to manatees and to guide the Service's section 7 process in evaluating requests for letters of concurrence, requests for initiation of consultation, and during formal consultation to identify measures which eliminate the risk of incidental take of manatees.

The Service Director's Policy Memorandum, dated January 22, 2003, altered how the Service implements the section 7 consultation process for manatees. This memorandum requires that the Service enter formal consultation during watercraft access permit review (*e.g.*, Corps section 10/404 permit) when the permitting agency concludes "may effect, not likely to adversely affect." Previous to this memorandum, the Service could concur with "not likely to adversely affect" determinations

and conclude section 7 consultation informally. Thus, at the current time, the Service has prepared and will continue to prepare biological opinions through the formal consultation procedures for all watercraft access permit requests where the Federal action agency concludes a "may effect."

D. Alternatives Considered in Detail

1. **Alternative 1** (No Incidental Take Authorized for the Florida Manatee in All Four Stocks - No Action)

As described earlier, NEPA and its implementing regulations require that all reasonable alternatives be evaluated during the preparation of an EIS. This includes an evaluation of taking no action (*i.e.,* not promulgating incidental take regulations for Florida manatees under the MMPA). The No Action Alternative serves as the environmental baseline for alternatives comparison. Under the No Action Alternative, the Service's manatee conservation efforts would remain in effect, as well as the State's efforts to establish and enforce manatee speed zones. Local government manatee protection planning would likewise continue. However, no mitigating measures that could reduce the take of manatees may be required under a LOA. The conservation of manatees under the authorized take provisions of the MMPA would not be in effect. All watercraft related incidental take of manatees would remain unauthorized.

The No Action Alternative would affect all four manatee stocks. Manatee habitat affected includes 3.73 million acres of nearshore open water habitat, of which 1.1 million acres are designated manatee critical habitat and 2.25 million acres are seagrass.

Almost 57,000 acres of manatee aggregation habitat exists in Florida. Under this alternative, the MMPA LOA process would not be used to require mitigating measures to protect and restore manatee habitat.

Alternative 1 (No Action) includes present and reasonably foreseeable future conditions, without a final MMPA rule. Current conditions are: 1) the available data demonstrates that watercraft related manatee mortality is increasing; 2) ESA section 7 incidental take statements are precluded absent MMPA section 101 (A)(5) incidental take authorization; 3) the Service Director's Policy Memorandum, dated January 22, 2003, has increased the administrative burden and costs associated with section 10/404 compliance; and, 4) the 2001 "manatee key," developed with the Corps to assess the effects of watercraft access permitting on manatees for section 7 coordination, remains in effect. The baseline is dynamic, and changes to reflect current conditions in real time.

For the purpose of evaluating the feasibility of MMPA rulemaking, the baseline is derived from a broad set of considerations, including the Settlement Agreement and the stated purpose and need of the MMPA rulemaking, as follows:

> A. The proposed rulemaking is independent of five other actions stipulated in the Settlement Agreement. The Settlement Agreement requires that the Service: 1) assess the need for additional manatee refuges and sanctuaries at an ecosystem level, focusing on areas needed for recovery of the species; 2) revise the Recovery Plan; 3) develop incidental take

regulations under the Marine Mammal Protection Act, if appropriate (addressed in this EIS); 4) describe, by letter, its continued increased effort to enforce manatee speed zones; 5) revise the Service's "interim guidance" under section 7 of the ESA for addressing potential manatee impacts associated with development and permitting of new watercraft access facilities and make the revision available for public review; and 6) provide written progress reports on the Settlement Agreement every six months.

B. The need identifies the conditions and opportunities the Service proposes to address, while the purpose identifies the goals and objectives that influence identification of reasonable and prudent alternatives, including the preferred alternative. As defined in the Draft EIS, the proposed rulemaking is independent of any other actions related to the Settlement Agreement and changes in Service section 7 policy. The Service's purpose and need are reiterated below:

Need: to examine the issue of watercraft related incidental take of Florida manatees and determine where the incidental, unintentional take of manatees may be authorized in accordance with the provisions of the MMPA.

Purpose: to analyze the feasibility of promulgating regulations in accordance with section 101(a)(5)(A) of the MMPA to authorize the incidental, unintentional take of small numbers of Florida manatees in specified areas as a result of government programs related to watercraft access and watercraft operations in the State of Florida for a specified period of five years.

2. **Alternative 3** (Incidental Take Authorized in the NW and USJ stocks, and the Atlantic Stock with mitigating measures to remain or be implemented)

Alternative 3 includes the previously specified geographic areas encompassing the NW, USJ, and Atlantic stocks. The lower St. Johns River, below the City of Palatka, the east coast of Florida, and the Florida Keys are considered to represent the Atlantic Stock. Based on the 2001 synoptic surveys, this alternative affects 58 percent of the Florida manatee population, or 1,897 individuals. The specified area includes the following Florida counties: Bay, Brevard, Broward, Clay, Citrus, Dixie, Duval, Escambia, Flagler, Franklin, Gilchrist, Gulf, Hernando, Indian River, Jefferson, Lake, Lafayette, Levy, Marion (adjacent to the Withlacoochee River), Martin, Miami-Dade counties, Monroe (east of Whitewater Bay), Nassau, Okaloosa, Okeechobee (eastern portion), Palm Beach, Pasco, Putnam, Santa Rosa, St. Johns, St. Lucie, Seminole, Taylor, Volusia, Wakulla, and Walton.

In the Draft EIS, the Service identified Alternative 3 as the Preferred Alternative. Based on the information available at that time, our qualitative belief was that a negligible impact finding for the Atlantic Stock would be possible with the implementation of required mitigating measures. However, based on new scientific information (Appendix I), it is apparent that mitigating measures would be required to make a negligible impact finding in more than one stock. Mitigating measures that would decrease incidental take of a magnitude to conclude a negligible impact have not been identified for the Atlantic Stock, and possibly others, at this time.

The assumptions and criteria we originally proposed to use for determining negligible impact are being reconsidered.

E. Alternatives Not Addressed in Detail, but With Impacts That Are Within the Range of Impacts Identified in Alternatives Analyzed in Detail

1. **Alternative 2** (Incidental Take Authorized in the NW and USJ Stocks)

Alternative 2 includes the specified geographic area encompassing the NW and USJ stocks for a specified period of five years. Based on the 2001 synoptic surveys, this alternative affects 15 percent of the Florida manatee population, or 489 individuals. The specified area includes the following Florida counties: Citrus, Pasco, Hernando, Levy, Marion (adjacent to the Withlacoochee River), Dixie, Taylor, Wakulla, Franklin, Gulf, Escambia, Santa Rosa, Okaloosa, Walton, Bay, Jefferson, Lafayette, Gilchrist, St. Johns, Putnam (south of Palatka), Flagler (St. Johns River portion), Lake, Volusia (St. Johns River portion), and Seminole.

Alternative 2 would require MMPA rulemaking to authorize watercraft related incidental take for Federal, State and local agencies in the geographic area of the NW and USJ stocks. Based on the proposed Benchmark Methodology and preliminary results of the Incidental Take Model, current levels of watercraft related incidental take would need to be reduced by over 50 percent in the USJ Stock and almost 75 percent in the NW Stock to meet the negligible impact standard. We have not identified the required mitigating measures which would result in a reduction of this magnitude at this time based on available information.

The assumptions and criteria we originally proposed to use for determining negligible impact are being reconsidered.

2. **Alternative 7** (Incidental Take Authorized in the USJ Stock)

Alternative 7 includes the specified geographic area encompassing the USJ Stock for a specified period of five years. Based on the 2001 synoptic surveys, this alternative affects just over 3 percent of the Florida manatee population, or 112 individuals. The specified area includes the following Florida counties: Putnam (south of Palatka), Flagler (St. Johns River portion), Lake, Volusia (St. Johns River portion), and Seminole.

Alternative 7 would require MMPA rulemaking to authorize watercraft related incidental take for Federal, State and local agencies in the geographic area of the USJ Stock. The observed level of watercraft related manatee mortality averaged 2.4 manatees during the period 1998 to 2002, which exceeds the preliminary results of the Incidental Take Model negligible impact threshold identified in the Proposed Rule. Watercraft related incidental take of 4 manatees per year (20 animals for the five year period of a rule) would have a negligible effect if a higher risk of 10 percent increase in the time to reach OSP was adopted.

The assumptions and criteria we originally proposed to use for determining negligible impact are being reconsidered.

F. Alternatives Considered, but Not Addressed in Detail

1. **Alternative 4** (Incidental Take Authorized for the NW, USJ, and Atlantic Stocks, and Tampa Bay Region)

Alternative 4 further expands incidental take coverage in Florida. This alternative includes all the previously specified geographic areas described in Alternative 2, and the Tampa Bay area for a specified period of five years. The Tampa Bay area extends from the Pasco/Hernando County line southward to the Sarasota/Manatee County line. Alternative 4 affects 68 percent of the Florida manatee population, or 2,228 individuals.

Alternative 4 would require mitigating measures for the Atlantic Stock and Tampa Bay area in order to reach a negligible finding for this specified geographic area, as described above. Alternative 4 will not be addressed in detail in this EIS due to the insufficient scientific justification of separating the Tampa Bay area from the remainder of the SW Stock and the inability to propose a negligible impact finding in that stock.

2. **Alternative 5** (Incidental Take Authorized for all Four Stocks in the State of Florida - Government Agencies)

Alternative 5 includes the specified geographic area encompassing the State of Florida. This alternative would include the authorization of incidental take for watercraft related manatee mortality from government programs regulating the access and operation of watercraft in Florida waters throughout the entire State, including all four manatee stocks, for a specified period of five years. This alternative affects 100 percent of the Florida manatee population (3,276 individuals) and includes all counties in Florida which are inhabited by manatees.

The Service is not able to implement mitigating measures across the State of Florida that will bring all four stocks to a point that we can consider this alternative.

3. **Alternative 6** (Incidental Take Authorized for all Four Stocks in the State of Florida - Direct Regulation of Individual Boaters)

Alternative 6 includes the specified geographic area encompassing the State of Florida. This alternative would provide authorization for incidental take for watercraft related manatee mortality for all individual boaters operating watercraft in Florida waters throughout the entire State for a specified period of five years. This alternative affects 100 percent of the Florida manatee population and includes all counties in Florida which are inhabited by manatees.

Under this alternative, each individual boater in the State would be authorized under the LOA process. This would be a significant undertaking, since the 1999 FWC Division of Law Enforcement reported more than one million vessels using Florida's waterways, including over 829,000 State-registered vessels and about 300,000 out-of-State vessels, and in 2001 increasing to just over 943,600 State-registered vessels and more than 400,000 out-of-State vessels (FWC 2001).

This effort would also be in addition to State and Federal agency-regulated interaction between boats and manatees including: (1) regulating boater behavior on the water; (2) permitting construction of watercraft access facilities; (3) funding construction of watercraft access facilities; (4) operating watercraft access facilities; and (5) operating watercraft.

The Service questions the feasibility of this effort due to our limited resources and the amount of resources that would need to be expended to implement this effort, as discussed above.

G. Summary of Alternatives to be Evaluated in Detail

The Service will analyze in detail two alternatives. Alternatives 1 and 3 represent the range of environmental and socioeconomic impacts that are reasonably certain to occur as a result of a finding or MMPA rulemaking. The alternatives discussed in this Final EIS differ from those identified in the Draft EIS as a result of new scientific information and analysis, and consultation with affected agencies, boating interests, and the public.

Table 3: Summary of Alternatives to be Evaluated in Detail for MMPA Florida Manatee Incidental Take Rulemaking.

Alternative	***Specified Area for Authorized Incidental Take***	***Percent of Manatee Population (2001 survey) Affected by Incidental Take***
Alternative 1 (No Action)	None	0%
Alternative 3 (Incidental Take Authorized in the NW and USJ stocks, and the Atlantic Stock with mitigating measures)	NW, USJ, and Atlantic stocks	58%